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A new species of *Commersonia* (Malvaceae *s.l.*), from the Eyre Peninsula, South Australia.

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Abstract

Commersonia multiloba C.F.Wilkins & Whitlock is described as new and illustrated. It is restricted in distribution and apparently confined to two populations on the northern Eyre Peninsula in South Australia and regarded as a species with special conservation needs.

Introduction

No comprehensive treatments of *Commersonia* J.R.Forst.& G.Forst. (1775) or *Rulingia* R.Br. (1820) have been published since Bentham (1863). There are 11 currently recognised species of *Commersonia* in Australia (Hnatiuk 1990), with one of these also occurring in SE Asia and islands of the Indo-Pacific, and 23 species of *Rulingia* in Australia (Hnatiuk 1990), plus one in Madagascar. Twenty-two of the 34 species in the two genera occur in Western Australia. *Rulingia* is currently delimited from *Commersonia* by having one rather than three staminodes between the stamens. However, taxonomic confusion between the two genera exists. Many species described as *Commersonia* were later placed under *Rulingia* (e.g Turczaninow 1849). Conversely, Mueller, in his *Systematic Census of Australian Plants* (1882, 1889), combined all species of the two genera under the previously described *Commersonia*. His generic concept was not generally accepted.

There is doubt as to separating *Commersonia* and *Rulingia*. Although these genera together form a monophyletic group, as shown by cladistic analyses of morphological data of the Lasiopetaleae (Wilkins 2002) and recent studies of *ndh*F molecular data (Whitlock *et al.* 2001), the species are intermingled and neither genus is monophyletic as currently delimited. However, only a few species of each genus were included in each analysis and current studies by Wilkins and Whitlock aim to include all species, to further test this result.

Commersonia multiloba, the species here described as new, is endemic to the northern area of Eyre Peninsula in South Australia. It is described prior to publication of a revision of the genus for the *Flora of Australia* (Wilkins in prep.) as it will be nominated as having priority needs for conservation.

Methods

Collections from AD, BM, K, MEL, NSW, NT, PERTH and W herbaria have been examined in this study, including type specimens of *C. tatei* F. Muell. ex Tate and of another closely related species *C. crispa* Turcz. The authors have collected and studied the habit and morphological characters of *C. multiloba* in its natural habitat. Floral measurements are from rehydrated herbarium collections and vegetative measurements are from dried specimens. Density of leaf hairs is defined as scattered when the hairs are well separated, moderately dense when the hairs are just touching laterally, dense when the hairs strongly overlap with the epidermis remaining visible, and a tomentose surface

where hair density is such as to conceal the epidermis. Fruit measurements include the length of the setae on the outer surfaces.

The distribution map was compiled from the Online Map Creation internet site (http://www.aquarius.geomar.de/omc_intro.html) that uses GMC software.

Taxonomy

Commersonia multiloba C.F.Wilkins & Whitlock, *sp. nov.*

C. tatei F. Muell. ex Tate affinis sed foliis ovatis marginibus multi-lobatis serratis non obovatis ad apice trilobatis, pedicellis infra pilos glandulis inconspicuis brevibus non glandulis longe-stipitatis conspicuis.

Type: Australia: South Australia: On Lincoln Hwy, NNE of Cowell (precise locality withheld), 21 Sept. 2004, *C.F. Wilkins & B.A. Whitlock 1933*; (holotype: AD 182018; isotypes: CANB, K, PERTH).

Commersonia tatei anct. non F.Muell. ex Tate: Jessop, *Fl. S. Austral.* edn 4, 2: 849 (1986) *p.p.* (as to "larger leaved form", Fig. 442A).

Dwarf shrub, 15–50 x 30–100 cm, clonal growth observed from rhizomes, shortly single-stemmed, then many spreading, recurved branches. *Young stems* with scattered, short-stalked, or sessile, 8–12 erect-armed, either ferruginous or white with tan-centre, stellate hairs, 0.5–1.3 mm diam., over dense, sessile, white stellate hairs 0.2–0.8 mm diam., and inconspicuous, white, clavate glands 0.1 mm long; stem becoming red-brown or grey, glabrous with longitudinal, irregular, fine ridging. *Stipules* caducous, narrowly-lanceolate, margin irregular, rarely bilid, 1.0–5.3 x 0.2–0.7 mm, inner surface with scattered, 1–3 -armed, appressed white hairs, to 0.5 mm long, and scattered to moderately dense clavate glands to 0.2 mm long; outer surface with moderately dense, 8–14 erect-armed, white stellate hairs, 0.1–0.5 diam. *Leaves* of differing sizes in fascicles of 4–7; petioles 0.3–5.5 mm long, hairs as on young stem; blade ovate, 1.5–20.0 x 1.2–7.5 mm, asymmetric at base; adaxial surface with dense hairs or tomentose surface, hairs sessile, 6–12 -armed, erect, white, short, stellate, hairs to 0.1–0.25 mm diam. and occasional larger stellate hairs towards margin, with arms to 0.8 mm long; abaxial surface with scattered, 12–24 erect-armed, ferruginous, stellate hairs, to 1.0 mm diam., over a tomentose surface of sessile, 12-armed, erect, white, stellate hairs to 0.2 mm diam.; margin irregularly serrate, undulate, with lobes recurved, apex obtuse. *Inflorescence* leaf-opposed, mainly terminal cymes, 6.5–13.5 mm long, flowers 1–5 (6). *Bud* base attenuate, brown; apex acute, white. *Peduncle* 2.2–6.8 mm long. *Pedicel* 2.3–5.0 mm long. Peduncle and pedicel with dense, sessile, 6–12 -armed, stellate hairs, erect, tan, or white with tan centres, over white stellate hairs 0.2–0.7 mm diam. and scattered, white, clavate glands to 0.15 mm long. *Bract* towards base of pedicel, narrowly-ovate, green, membranous, becoming red-brown, 1.8–4 x 0.15–0.4 mm, surfaces as in stipules above, margin irregular. *Epicalyx* absent. *Calyx* white, 4.6–9.0 mm long, tube *c.* 1/3 of total calyx length, lobes ovate, 3.1–4.9 x 1.6–3.7 mm, apex acute; adaxial surface, green, or pale pink at base, glabrous or with scattered, 1 or 2 -armed, appressed, white hairs to 0.3 mm long, and towards the margin and centre of lobes with dense, 1–4 -armed, erect, white, stellate hairs, to 0.15 mm diam.; abaxial surface with 8–12 -armed, erect, stellate hairs, base tomentose with moderately dense, ferruginous, stellate hairs, 0.8–1.0 mm diam. over dense, white, stellate hairs to 0.3 mm diam., and scattered, stalked, clavate glands to 0.2 mm long, and towards apex of lobe, dense, white, stellate hairs to 0.3 mm diam. *Petals* glabrous, white with red base and central streak of red, 2.6–4.2 x 2.6–3.0 mm, base ovate, incurved around stamen but not gibbous, margin of base cucullate; apical ligule spathulate, white, 1.7–2.3 x 0.9–1.2 mm. *Staminal tube* glabrous, 0.25–0.3 mm long. *Staminodes* 3 between adjacent anthers each anther, glabrous; central staminode, white, ovate, base smooth and apical margin papillose, 1.4–3.2 x 0.6–0.9 mm, 2 lateral

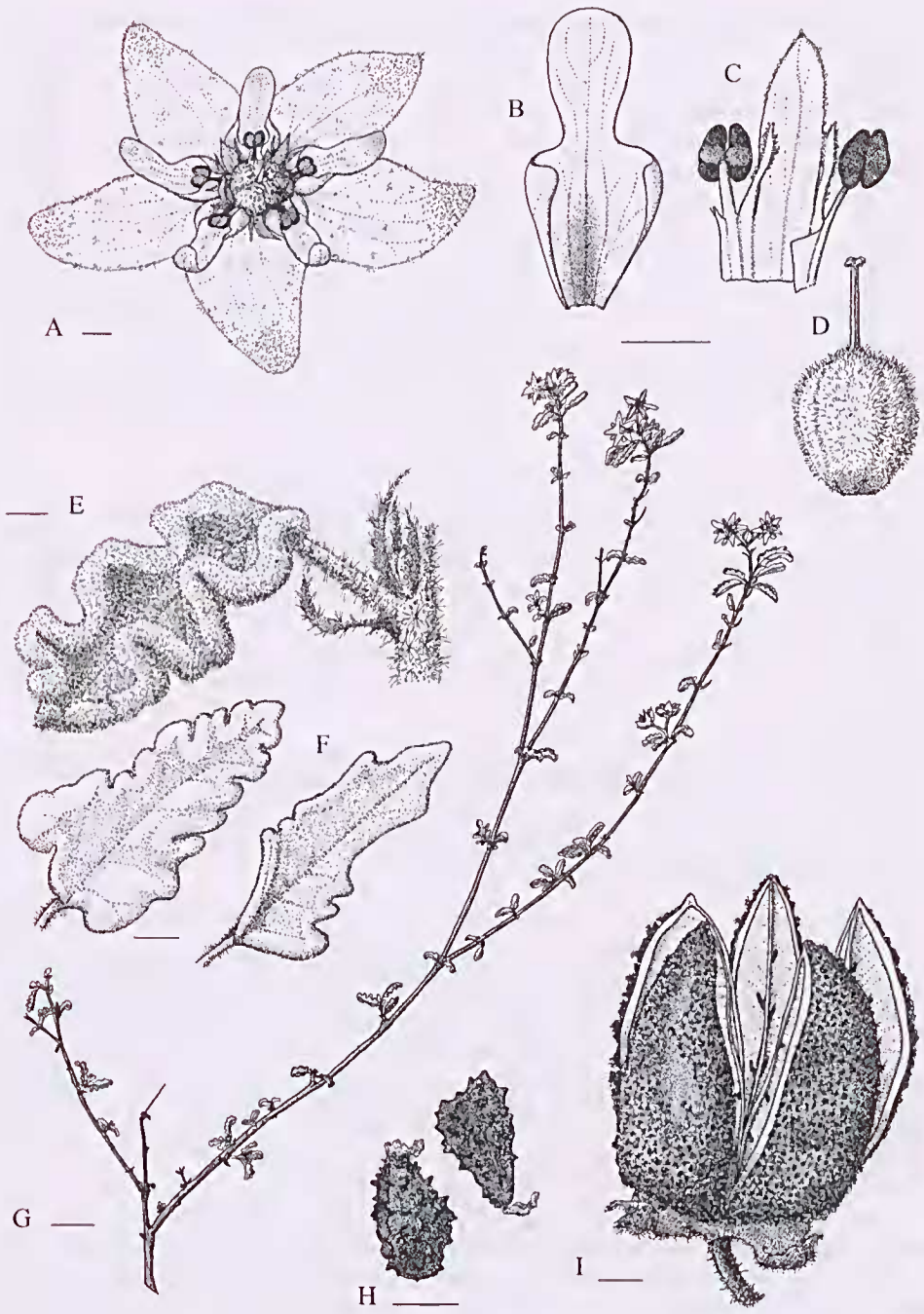

Figure 1. Illustration of *Commersonia multiloba*. A. flower. B petal. C. stamens and staminodes, D. gynoecium. E. mature leaf and stipules. F. leaves showing unequal base. G. habit. H. seed. I. fruit with seed fallen. (Voucher C. Wilkins & B. Whitlock 1933)

staminodes linear, papillose, red, mainly adnate to the central staminode, occasionally to the anther filament, sometimes with both forms of attachment in the same flower, 0.6–1.5 x 0.1–0.15 mm. *Filaments* white, glabrous, 0.4–0.6 x 0.2 mm. *Anthers* dark red, ventrifixed, broadly-elliptic, 0.6 x 0.8–0.9 mm, dehiscence from extrorse slits, pollen yellow. *Ovary* 5-celled, ovoid to slightly obovoid, 1.0 x 0.7–1.2 mm, locules fused laterally with no indentation and free at the central axis, outer surface green with pre bristle outgrowths. *Ovules* 6–10 per cell. *Styles* 5, green, 0.75–0.9 mm long, glabrous, free at base, fused at capitate stigmas. *Fruit* loculicidal, longer than wide, slightly obovate, or ellipsoid, brown, thin woody, 6.5–11.5 x 5.5–8.0 mm, with moderately dense, soft, white, stellate hairs covering the outer surface of fruit, below moderately dense setae (bristles with hairs) mainly towards apex of fruit, 0.2–0.5 mm long, and on carpel fusion lines to 0.9 mm long; setae brown, with an apical, white, 12–24 -armed stellate hair and 1 or 2 basal stellate hairs, wings on carpel fusion lines present or absent, 0.2–0.6 mm long. *Seed* dark brown, 1.8–2.0 x 1.3–1.4 mm, exotesta strongly tuberculate, glabrous, with fine, longitudinal ridging. *Aril* a white, translucent lobe flared from hilum *c.* 0.5 x 0.7mm (Fig. 1)

Phenology: This species is recorded as flowering from August to October.

Specimens examined: **SOUTH AUSTRALIA:** (precise localities withheld) N of Cowell, 22 Oct 1983, *J.D. Briggs1411* (AD, CANB); N of Cowell, Eyre Peninsula, 18 Aug. 1975, *P Copley 40* (AD); Thurlga Station, between woolshed and Thurlga Farm, 17 Sept. 1961, *K.D. Rohrlach 911* (AD); On Lincoln Hwy, NNE of Cowell, 21 Sept. 2004, *C.F. Wilkins1936 & B.A. Whitlock* (AD, PERTH).

Distribution: *Conuersouia multiloba* is restricted in distribution to the Eyre Peninsula, and occurs from Thurlga Station in the Gawler Ranges, to NE of Cowell (Fig. 2).

Habitat: This species grows on red-brown clayey sand over granite, or white sand, in *Melaleuca* and *Acacia* shrubland, with scattered mallee and *Triodia*.

Etymology: The species epithet *multiloba* refers to the many serrate lobes on the margin of leaves. This feature distinguishes *C. multiloba* from the closely related *C. tatei* that usually has three lobes at the apex of the leaf.

Conservation status: There are two known populations of this species endemic to the Eyre Peninsula. Three collections from NNE of Cowell are probably from the same population. One is a recent collection by the authors. There are *c.* 30 plants in the area, all of which are in firebreaks, either just outside a farm fence on the road verge, or inside the fence in a farm paddock. As clonal shoots were observed to be a method of reproduction for this species in this area, it is possible these plants may all be from one parent plant. The status of the other population collected in 1961 from Thurlga Station 'between the wool shed and Thurlga farm' is unknown to the authors. This species is considered to be at risk, however, further surveys of the area are required to substantiate the authors suggested ROTAP code 3E (Briggs & Leigh 1996).

Affinity: Conuersouia multiloba appears to be most closely related to *C. tatei* from which it differs in having ovate leaves with multi-lobed, serrate margins rather than obovate leaves with a tri-lobed / tri-serrate apex, bi-coloured buds with ferruginous rather than white stellate hairs on the base of the outer surface of the calyx, and in the pedicel having inconspicuous, short, white, clavate glands beneath the hairs rather than conspicuous, long-stalked, red-tipped, clavate glands. In addition, fruits of *C. multiloba* are longer than wide rather than wider than long or as wide as long in *C. tatei*. Similarities between these two species include similar shape and colour of their calyces, staminodes and petals.

Jessop (1986) suggested that the larger leaved form of *C. tatei* shared some similarity with *C. crispa* from Western Australia. *Conuersouia crispa* is similar to *C. multiloba* in

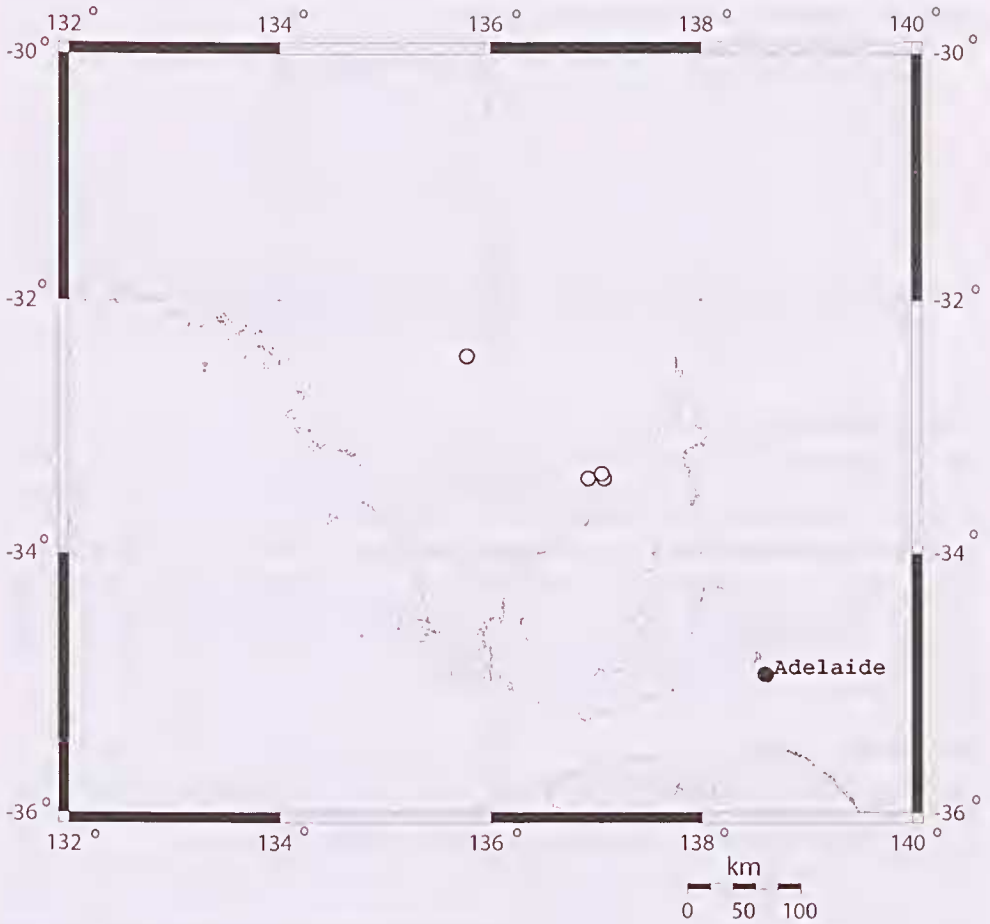

Figure 2. Distribution of *Commersonia multiloba*

having the same multilobed leaf margin, in petal and calyx shape, and in having buds with brown hairs on the base, however, the fruits of *C. crispa* have a woolly appearance due to the abundant setae up to 3.0 mm long all over the outer surface, rather than being invested with setae 0.2–0.5 mm long and mainly present on the carpel fusion lines and towards the apex of the fruit. *Commersonia crispa, C. tatei* and *C. multiloba* all have the base of the petal with a cucullate margin, a character only present in these three species.

Comment: In the Flora of South Australia (Jessop 1986), the illustration (Figure 442 A) appears to be a composite of *C. tatei* and *C. multiloba*. The drawing of the habit of the larger leaved form of plant on the left-hand side of the page resembles *C. multiloba*, however, the drawing of the twig of the right-hand side has the leaf form of *C. tatei*. The drawings of the flowers and seed (incorrectly labeled as a fruit) are consistent with both species.

There are two separate fragments on one herbarium sheet (AD 96941200), collected by Jean Galbraith from Edillilie Road on the Eyre Peninsula. The upper fragment is *C. tatei* and the lower one is *C. multiloba*. The collector noted that the lower specimen had larger leaves, slightly different vestiture, terminal flowers, and an erect, bushy habit rather than a prostrate habit as previously observed in *C. tatei*. As the distribution ranges of *C. tatei* and *C. multiloba* apparently do not overlap, the same location for both fragments attached to one sheet is questionable. Therefore, this collection site has not been included in the distribution of *C. multiloba*.

Key to *C. multiloba* and closely related species

1 Leaves ovate with multi-lobed, serrate margins; pedicel with glands absent or with inconspicuous, short, white, clavate glands beneath the hairs.
  2 Fruits with moderately dense setae 0.2–0.5 mm long, mainly present on the carpel fusion lines and towards the apex of the fruit..... .....*C. multiloba* (Eyre Peninsula, South Australia).
  2. Fruits with woolly appearance due to abundant setae, up to 3.0 mm long, present all over the outer surface of the fruit..... .....*C. crispa* (South-west of Western Australia).
1. Leaves obovate with a tri-lobed / tri-serrate apex; pedicel with conspicuous, long-stalked, red-tipped, clavate glands, as long as, or longer than the hairs. ....*C. tatei* (Eyre Peninsula, South Australia).

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